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**REMARKS**

Claims 1, 2, 4-12, 14-20 and 31-43 are pending in the application. Claims 1, 2, 4-12, 14-20 and 31-43 stand rejected in the referenced office action.

Reconsideration of the application is respectfully requested in view of the remarks below. The Examiner's objections and rejections are addressed in substantially the same order as in the reference office action.

**REJECTION UNDER 35 USC § 101**

Claim 11 stand rejected under 35 USC § 101 as being directed to non-statutory subject matter.

The examiner asserts that with respect to claim 11 the method does not produce a tangible result and that it is unclear how the value of the property result is being stored, displayed, or used in any tangible manner. Applicant respectfully submits that this is irrelevant.

Attention of the Examiner is drawn to the following from the United States Patent and Trademark Office OG Notices: 22 November 2005:

"For example, the court in State Street noted that the claimed invention in Allapat "constituted a practical application of an abstract idea (a mathematical algorithm, formula, or calculation), because it produced 'a useful, concrete and tangible result' - smooth waveform." Id. Similarly, the claimed invention in Arrhythmia "constituted a practical application of an abstract idea (a mathematical algorithm, formula, or

calculation), **because it corresponded to a useful, concrete and tangible thing - the condition of a patient's heart.**" *Id.*" ( emphasis added).

In the present case, the invention of independent claim 11 is directed towards estimating a value of the property of the fluid downhole and thus corresponds to a useful concrete and tangible thing—the property of a fluid in the subsurface. Accordingly, even according to the current guidelines for examination, the claims are directed towards statutory subject matter.

Applicant further draws the attention of the Examiner to the following, from MPEP § 2106:

To be statutory, a claimed computer-related process must either: (A) **result in a physical transformation outside the computer for which a practical application in the technological arts is either disclosed in the specification or would have been known to a skilled artisan** (discussed in i) below), or (B) **be limited to a practical application within the technological arts** (discussed in ii) below). See *Diamond v. Diehr*, 450 U.S. at 183-84, 209 USPQ at 6 (quoting *Cochrane v. Deener*, 94 U.S. 780, 78788 (1877)) ("A [statutory] process is a mode of treatment of certain materials to produce a given result. It is an act, or a series of acts, performed upon the subject-matter to be transformed and reduced to a different state or thing.... The process requires that certain things should be done with certain substances, and in a certain order; but the tools to be used in doing this may be of secondary consequence."). See also *Alappat*, 33 F.3d at 1543, 31 USPQ2d at 1556-57 (quoting *Diamond v. Diehr*, 450 U.S. at 192, 209 USPQ at 10). See also *id.* at 1569, 31 USPQ2d at 1578-79 (Newman, J., concurring) ("**unpatentability of the principle does not defeat patentability of its practical applications**") (citing *O'Reilly v. Morse*, 56 U.S. (15 How.) at 114-19). If a physical transformation occurs outside the computer, a disclosure that permits a skilled artisan to practice the claimed invention, i.e., to put it to a practical use, is sufficient. On the other hand, it is necessary for the claimed invention taken as a whole to produce a practical application if there is only a transformation of signals or data inside a computer or if a

process merely manipulates concepts or converts one set of numbers into another. (emphasis added).

In the present instance, claim 1 is clearly directed towards a practical application within the technological arts, namely the estimating a value of the property of the fluid downhole. Unpatentability of the computer implemented process that is used for determining the structure of the earth does not defeat patentability of a practical application of the method. Without knowledge of the the property of the fluid downhole, it would be impossible to carry out exploration for hydrocarbons.

The MPEP § 2106 further states that:

A claimed process is clearly statutory if it results in a physical transformation outside the computer, i.e., falls into one or both of the following specific categories ("safe harbors").

.....  
Another statutory process is one that requires the measurements of physical objects or activities to be transformed outside of the computer into computer data (*In re Gelnovatch*, 595 F.2d 32, 41 n.7, 201 USPQ 136, 145 n.7 (CCPA 1979) (data-gathering step did not measure physical phenomenon); *Arrhythmia*, 958 F.2d at 1056, 22 USPQ2d at 1036), where the data comprises signals corresponding to physical objects or activities external to the computer system, and where the process causes a physical transformation of the signals which are intangible representations of the physical objects or activities. *Schrader*, 22 F.3d at 294, 30 USPQ2d at 1459 citing with approval *Arrhythmia*, 958 F.2d at 1058-59, 22 USPQ2d at 1037-38; *Abele*, 684 F.2d at 909, 214 USPQ at 688; *In re Taner*, 681 F.2d 787, 790, 214 USPQ 678, 681 (CCPA 1982) (emphasis added).

In the present instance, claim 1 clearly specifies the measurement of a physical quantity. These measurements are transformed into computer data which are used to estimate the estimating a property of the fluid downhole. As noted above, a value of the property of the fluid downhole is of considerable importance.

The MPEP § 2106 further states:

Examples of this type of claimed statutory process include the following:

.....  
A method of using a computer processor to conduct seismic exploration, by imparting spherical seismic energy waves into the earth from a seismic source, generating a plurality of reflected signals in response to the seismic energy waves at a set of receiver positions in an array, and summing the reflection signals to produce a signal simulating the reflection response of the earth to the seismic energy. In this example, the electrical signals processed by the computer represent reflected seismic energy. The transformation occurs by converting the spherical seismic energy waves into electrical signals which provide a geophysical representation of formations below the earth's surface. **Geophysical exploration of formations below the surface of the earth has real world value.**

This is believed to address the rejection under 35 USC § 101,

#### **REJECTION UNDER 35 USC § 103**

Claims 1, 11, 31 and 43 stand rejected under 35 USC § 102(b) as being anticipated by *Birchak* (US5741962) in view of *Matsiev et al.* (US6494079).

Applicant notes that the examiner has failed to respond to arguments made in response to the previous office action that *Birchak* teaches away from an acoustic transducer in contact with the fluid. The argument that *Birchak* teaches away from the present invention was also made in the Request for Continuing Examination and not addressed by the Examiner in the referenced office action. Applicant requests that the Examiner address this argument. For the convenience of the examiner these arguments by repeated here.

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It is noted in *Birchak* that

“the delay line 104 maybe a machineable glass or any other suitable material that would sufficiently delay the acoustic signal passing therethrough, preferably by a time that exceeds the transducer ringdown time...” (emphasis added).

Thus, it is clear that if the transducer were actually in contact with the borehole fluid, the device of *Birchak* would be rendered inoperative due to inability to measure a signal during the transducer ringdown. Hence *Birchak* teaches away from the claimed invention.

Hence any combination of *Birchak* with any other prior art would not be permissible for the purposes of a rejection under 35 USC § 103. Accordingly, applicant respectfully submits that claim 1 and claims 2, 4-10, 41 and 42 that depend upon claim 1 are also patentable under 35 USC § 103 over *Birchak* and the prior art of record.

In the present case the examiner is attempting to combined *Birchak* with *Matsiev*. Applicant notes that *Matsiev* is directed towards laboratory measurements of fluid properties wherein a transducer is suspended in a fluid. Additionally attention of the examiner is drawn to the following from *Matsiev*:

“A method for measuring a property of a fluid composition in a conduit, the method comprising: placing a mechanical resonator, adapted to suppress the generation of acoustic waves in the fluid composition . . . “ (claim 14);

"Because the resonating characteristics of both the TSM resonator and the tuning fork resonator virtually eliminate the generation of acoustic waves, the size of the sample wells can be kept small.." col. 2 li 67 to col. 3 li 3.

On the other hand generation of acoustic waves is critical to the invention of *Birchak*. A search of *Birchak* shows 131 uses of the word "acoustic" in the text and claims of the application. The applicant respectfully submit that the examiner is once again trying to combine two references when there is a clear and categorical teaching away from combining the references and requests that the examiner address this argument.

Applicant respectfully submits that the examiner has failed to establish a *prima facie* case of obviousness and that claim 1 and claims 2, 4-10, 41 and 42 that depend upon claim 1 are also patentable under 35 USC § 103 over *Birchak* and the prior art of record.

Independent claim 11 and claims 12 and 14-20 that depend upon claim 11 are also patentable under 35 USC § 103 over *Birchak* in view of *Matsiev* and the prior art of record for the same reasons that claim 1 is patentable under 35 USC §§ 102-13 over *Birchak* and the prior art of record.

Independent claim 31 includes the substantive limitations of claim 1 discussed above. Accordingly, claim 31 and claims 32 -40 that depend upon claim 41 are also patentable under 35 USC §§ 102-13 over *Birchak* in view of *atsiev* and the prior art of

record for the same reasons that claim 1 is patentable under 35 USC §§ 102-13 over *Birchak* and the prior art of record.

Independent claim 43 includes the substantive limitations of claim 1 discussed above. Accordingly, claim 43 also patentable under 35 USC § 103 over *Birchak* in view of *Matsiev* and the prior art of record for the same reasons that claim 1 is patentable under 35 USC § 103 over *Birchak* in view of *Matsiev* and the prior art of record.

Claims 2, 4, 12, 14, 32-34 and 41-42 stand rejected under 35 USC § 103(a) as being unpatentable over *Birchak* in view of *Kleinberg* (US63465813).

The patentability of these claims has been addressed.. As noted above, *Birchak* teaches away from the claimed invention. Applicant again respectfully request that the examiner address this argument.

Claims 5-8, 15-18, 35-38 stand rejected under 35 USC § 103(a) as being unpatentable over *Birchak* in view of *Kleinberg* as applied to claim 1 and in view of *McFarland et al.* (US6182499).

The patentability of these claims has been addressed above. The combination of *Kleinberg* and *McFarland* does not teach or suggest the particular elements of the independent claims discussed above.

Claims 9-10, 19-20, and 39-40 stand rejected under 35 USC § 103(a) as being unpatentable over *Birchak* in view of *Kleinberg* and *McFarland et al.* as applied to claim 1 and in view of *He et al.* (US5798982).

The patentability of these claims has been addressed above. The combination of *Kleinberg*, *McFarland* and *He* does not teach or suggest the particular elements of the independent claims discussed above.

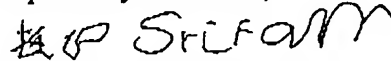
Claims 41-42 stand rejected under 35 USC § 103(a) as being unpatentable over *Birchak* in view of *Kleinberg*, *McFarland et al.* and *He et al.* as applied to claim 1 and in view of *Netzer* (US5763781).

The patentability of these claims has been addressed above. The combination of *Kleinberg*, *McFarland*, *He* and *Netzer* does not teach or suggest the particular elements of the independent claims discussed above.

The application is now believed to be in condition for allowance.

The Commissioner is hereby authorized to charge any fee and credit any overpayment associated with this response to Deposit Account No. 02-0429(584-37008-USCP).

Respectfully submitted,



Dated: 14 November 2006

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